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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,935	03/30/2004	Atsushi Sadamoto	251132US2RD	2914
22850	7590	06/09/2005		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER KITOV, ZEEV	
			ART UNIT 2836	PAPER NUMBER

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AKC

Office Action Summary	Application No.	Applicant(s)	
	10/811,935	SADAMOTO ET AL.	
	Examiner	Art Unit	
	Zeev Kitov	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>08/09/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

1. Claims 3 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A reason for that is in the following claim limitation: "the fuel cell is selected from the fuel cells of the fuel cell stack excepting a grounded fuel cell". It sounds like a limitation preventing the protected cell from being grounded. Such limitation is not supported by the Specification. On the contrary, Specification discloses grounding the cells in many instances. For purpose of examination it was assumed that the protected cell is the one that is not in direct contact with the ground terminal.
2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A reason for that is in the following claim limitation: "the fuel cell is an unit fuel cell". According to The Authoritative Dictionary of the IEEE Standard Terms, the cell is "the basic electrochemical unit". Therefore a limitation of the fuel cell being a unit fuel cell is a tautological expression bearing no meaning. Accordingly, any battery cell is a unit cell.

Objection.

Claim 4 is objected to due to a following typing error. The phrase: "the second switching device connected to a series of the fuel cell and the first switching device in parallel" should be retypes as follows: "the second switching device connected to a series connection of the fuel cell and the first switching device in parallel".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. (US 6,121,752) in view of Nunnally (US 5,869,200). Kitahara et al. disclose following elements of the claim including: the protection circuit for a battery stack including: a detection unit (elements 422a – 422c, 421a – 421c in Fig. 2) detecting abnormality of a potential difference between positive and negative electrodes of at least one cell of the battery stack; and a bypass unit forming bypass current path between the positive and negative electrodes (elements 432a – 432d in Fig. 2), the bypass unit being operative when the detection unit detects the abnormality of the potential difference (col. 6, line 37 – col. 7, line 53). However, Kitahara et al. do not disclose the fuel cell battery. Nunnally discloses bypassing individual units of the fuel cell battery (elements 48 in Fig. 10, col. 11, line 64 – col.12, line 17). Both references

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have the same problem solving area, namely providing battery cells protection.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Kitahara et al. solution by extending a protection of the battery cells to the fuel cells according to Nunnally, because (I) as Nunnally states (col. 12, lines 14 – 17), the fuel cells need bypassing protection to eliminate electrolyte evaporation and heating, and (II) such modification would help to manufacturers of the Kitahara et al. system to expand their market capacity.

Regarding Claim 2, Kitahara et al. disclose the bypass unit including a switching device (elements 432a – 432d in Fig. 2) conducting an electric current when the detection unit detects the abnormality of the potential difference, the switching device being connected to the fuel cell in parallel (col. 11, line 64 – col.12, line 17).

Regarding Claim 3, Kitahara et al. disclose protecting the battery cell, which is not in direct contact with the ground terminal (cells 30a – 30c in Fig. 2) and the bypass unit including a level conversion driver (elements 411a – 411d, 422a – 422c, 421a – 421c in Fig. 2) controlling the switching devices (elements 432a – 432c in Fig. 2).

Regarding Claim 4, Kitahara et al. disclose a first switching device (elements 50a – 50d in Fig. 8) connected to the fuel cell in series and cutting off an electric current when the detection unit detects the abnormality of the potential difference, and a second switching device (elements 51a – 51d in Fig. 8) connected to a series connection of the fuel cell and the first switching device in parallel and conducting an electric current when the detection unit detects the abnormality of the potential difference (col. 13, lines 28 – 39).

Regarding Claim 5, Kitahara et al. disclose protection of the fuel cell (cells 30a – 30c in Fig. 2), which is not in direct contact with a ground terminal and the bypass unit includes a level conversion driver (elements 411a – 411d, 422a – 422c, 421a – 421c in Fig. 2) switching the first switching device and the second switching device (elements 432a and 432b in Fig. 2).

Regarding Claim 6, Nunnally et al. disclose the battery cell as being the fuel cell (see Fig. 1). A motivation for modification of the primary reference is the same as above.

Regarding Claim 7, Kitahara et al. disclose the battery stack of cells including a series of plural unit cells (plurality of parallel connected batteries arranged in a series connected stack are shown in Fig. 8).

Regarding Claim 8, Kitahara et al. disclose plural detection units (elements 411a – 411d, 422a – 422c, 421a – 421c in Fig. 2) respectively detecting abnormality of potential differences between the positive and negative electrodes of the plural unit cells, the bypass unit being operative when at least one of the plural detection units detects the abnormality of the potential difference (col. 6, line 37 – col. 7, line 53).

Regarding Claim 9, Kitahara et al. disclose detection units (elements 411a – 411d, 422a – 422c, 421a – 421c in Fig. 2) respectively detecting abnormality of potential differences between the positive and negative electrodes of the plural unit cells, and the bypass unit forming bypass current path between the positive and negative electrodes when the detection unit detects an abnormality of the potential difference (col. 6, line 37 – col. 7, line 53). As to a stack built of fuel cells, Nunnally et al.

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disclose the fuel cell. A motivation for modification of the primary reference is the same as above.

Regarding Claim 10, Kitahara discloses a detection unit detecting abnormality of a potential difference between both ends of at least one series of plural unit fuel cells (parallel connected cells at the upper level in Fig. 8), the plural unit fuel cells being connected in series (through switches 50a – 50d in Fig. 8) and constituting a part of the fuel battery stack; and a bypass unit forming bypass current path between the ends (elements 51a – 51d in Fig. 8), the bypass unit being operative when the detection unit detects the abnormality of the potential difference (col. 6, line 37 – col. 7, line 53).

Regarding Claim 11, Kitahara discloses plural detection units (elements 411a – 411d, 422a – 422c, 421a – 421c in Fig. 2) respectively detecting abnormality of potential differences between the positive and negative electrodes of plural unit battery cells (parallel connected cells at different levels in Fig. 8), the plural unit battery cells being connected in series (through switches 50a – 50d in Fig. 8) and constituting a part of the cell stack; and a bypass unit (elements 51a – 51d in Fig. 8) forming bypass current path between both ends of the series of the plural unit cells, the bypass unit being operative when at least one of the plural detection units detects the abnormality of the potential difference (col. 6, line 37 – col. 7, line 53).

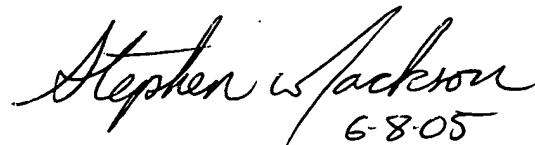
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571)

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272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (703) 872-9306 for all communications.

Z.K.
06/06/2005

A handwritten signature in cursive script that reads "Stephen W. Jackson". Below the signature, the date "6-8-05" is written in a similar cursive style.

STEPHEN W. JACKSON
PRIMARY EXAMINER